

AMENDMENTS TO THE CLAIMS

1. (currently amended) An integrated circuit configured to provide a microphone output signal, comprising:

a preamplifier coupled to receive an input signal, generated by a first microphone member that is movable relative to a second microphone member; and

a voltage pump to provide a bias voltage to either microphone member;

~~CHARACTERIZED IN THAT~~ and having

~~the voltage pump has~~ a first pump stage at which an oscillator provides oscillating signals with pulse amplitudes, ~~and where the voltage pump has~~

a second pump stage at which a voltage level is pumped to a higher level by means of a circuit operating on the oscillator signal, provided at the first stage;

~~the first pump stage is configured with~~ having first components with a nominal voltage level above which the components have a voltage breakdown level, ~~and~~

~~the second pump stage is configured with~~ having second components which have a voltage breakdown level above the voltage breakdown level of the first components; and

the pulse amplitudes of the oscillating signals provided at the first pump stage are substantially equal to the nominal voltage level.

2. (original) An integrated circuit according to claim 1, where the oscillator is configured to draw substantially equal levels of current across signal cycles provided by the oscillator.

3. (currently amended) An integrated circuit according to claim 1 ~~or 2~~, where the oscillator comprises paths with elements that can be charged with an electrical charge and where the paths are controlled by the oscillator to charge the different elements of the different paths alternately by a current drawn from a common source.

4. (currently amended) An integrated circuit according to ~~any of claims 1 to 3~~, where in the first pump stage ~~is configured with~~ has a voltage pump which receives the oscillating signal,

with a voltage pulse level, and provides a pumped oscillating signal, with a higher voltage pulse level, which is supplied to the second pump stage.

5. (currently amended) An integrated circuit according to ~~any of~~ claims 1 ~~to~~ 4, wherein an output signal of the first voltage pump stage is provided as a feedback signal to a circuit which maintains a fixed voltage pulse level of the signals output from the first pump stage (P1'; P2').

6. (currently amended) An integrated circuit according to ~~any of~~ claims 1 ~~to~~ 5, wherein the second pump stage comprises a voltage pump configured as a Dickson converter.

7. (currently amended) An integrated circuit according to ~~any of~~ claims 1 ~~to~~ 6, wherein an output signal of a Dickson type voltage converter, ~~of the Dickson type~~, is provided as a feedback signal to a circuit which provides a regulated voltage pulse level of the ~~signals~~ output of said signal from the voltage converter.

8. (currently amended) An integrated circuit according to ~~any of~~ claims 1 ~~to~~ 7, wherein multiple voltage converters are cascaded to provide the bias voltage, and including where a further voltage converter, which matches the first converter in the cascade, is said further voltage converter being coupled to receive the same signal as the first converter and to provide a feedback signal to a circuit which maintains a fixed voltage level of the signals output from the further voltage converter.

9. (currently amended) An integrated circuit according to ~~any of~~ claims 1 ~~to~~ 8, wherein the voltage pump comprises capacitors implemented as Metal capacitors.

10. (currently amended) An integrated circuit according to ~~any of~~ claims 1 ~~to~~ 9, wherein the voltage pump comprises diodes implemented as Poly-diodes.

11. (currently amended) An integrated circuit according to ~~any of~~ claims 1 ~~to~~ 10, wherein the voltage pump comprises diodes implemented as diffusion diodes in an N-well.

12. (currently amended) An integrated circuit according to ~~any of claims 1 to 11~~, wherein the preamplifier, comprises

a differential input stage with a first and a second input terminal and an output stage with an output terminal;

a feedback circuit, with having a low-pass frequency transfer function, coupled between the output terminal and the first input terminal and integrated on the semiconductor substrate; and

~~where~~ the second input terminal ~~provides~~ comprises an input for a microphone signal.

13. (currently amended) An integrated circuit according to claim 12, wherein the feedback circuit is a filter with a transfer function, in the frequency domain, with a zero and a pole; ~~wherein~~ and the zero is located at a higher frequency than the pole.

14. (currently amended) An integrated circuit according to claim 12 ~~or 13~~ wherein the preamplifier has a transfer function, in the frequency domain, with a zero and a pole; and ~~wherein~~ the pole ~~is being~~ located in the range 0.1Hz to 50 Hz or 0.1Hz to 100Hz or 0.1 to 200Hz.

15. (currently amended) An integrated circuit according to ~~any of claims 12 to 14~~, wherein the feedback circuit is a filter which, in the frequency domain, has a relatively high gain level below a transition frequency range and a relatively low gain level above the transition frequency range.

16. (currently amended) An integrated circuit according to ~~any of claims 12 to 15~~, wherein the transition frequency range is located below a frequency of about 100 Hz.

17. (currently amended) An integrated circuit according to ~~any of claims 12 to 16~~, wherein the transition frequency range is located below a frequency of 40 Hz.

18. (currently amended) An integrated circuit according to ~~any of claims 1 to 17~~, comprising a DC blocking capacitor coupled to diminish a DC voltage at the input of the preamplifier, which DC voltage originates from biasing the first or second microphone member.

19. (currently amended) An integrated circuit according to ~~any of claims 1 to 18~~, wherein the integrated circuit comprises an A/D converter.

20. (currently amended) An integrated circuit according to ~~any of claims 1 to 19~~, wherein the integrated circuit further is configured with an analogue-to-digital converter; and ~~wherein~~ the voltage pump and the analogue-to-digital converter are driven by a common clock-signal.

21. (currently amended) An integrated circuit according to claim 20 ~~or 21~~, wherein the analogue-to-digital converter is of the sigma delta converter type.

22. (currently amended) An integrated circuit according to ~~any of claims 1 to 21~~, comprising a high-pass filter.

23. (currently amended) An integrated circuit according to ~~any of claims 1 to 22~~, wherein the preamplifier is configured to provide a high-pass filter function.

24. (currently amended) A microphone comprising an integrated circuit according to ~~any of the claims 1 to 23~~.

25. (currently amended) A microphone according to claim 24, wherein the microphone is a condenser microphone.

26. (currently amended) A microphone according to claim 24, wherein the microphone is a MEMS microphone.